UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/718,246	11/22/2000	Antonio J. Colmenarez	US000320	1668

24737 7590 04/15/2004

PHILIPS INTELLECTUAL PROPERTY & STANDARDS
P.O. BOX 3001
BRIARCLIFF MANOR, NY 10510

EXAMINER	
MOE, AUNG SOE	
ART UNIT	**PAPER NUMBER**
2612	6

DATE MAILED: 04/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

4

Office Action Summary	Application No.	Applicant(s)	
	09/718,246	COLMENAREZ ET AL.	
	Examiner	Art Unit	
	Aung S. Moe	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 2 & 4
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 5-9, 12 and 13 rejected under 35 U.S.C. 102(b) as being anticipated by Garrett et al. (GB 2,273,411).

Regarding claim 1, Garrett '411 discloses an apparatus (i.e., see Figs. 1-6) for use in a image processing system (Fig. 7), the apparatus comprising:

a combined display-camera (i.e., Fig. 2, the elements 50 and 60) having a plurality of display elements (i.e., see figs. 4) and a plurality of camera elements (i.e., Fig. 4; page 5, lines 5-10), arranged substantially in a common plane with the display elements (i.e., noted from Figs. 2, 5 and 6, the camera is arranged substantially in the same plane as the display device)being interspersed with the camera elements, and

wherein each of at least a subset of the camera elements (i.e., see page 9, lines 20-25) has one or more imaging angles associated therewith, the one or more imaging angles being selected to provide a desired imaging operation for the combined display-camera (i.e., noted from Figs. 3 and 5, the imaging angle of the camera is selected based on the viewing angle 110. Since there are an infinite number of viewing angles 110, it is cleared that more than one imaging angles can be selected to provide a desired imaging operation; see page 7, lines 20-39).

Regarding claim 2, Garrett '411 discloses wherein at least a subset of the display elements comprise liquid crystal display elements (i.e., see page 8, lines 10+).

Regarding claim 3, Garrett '411 discloses wherein at least a subset of the camera elements comprise charge-coupled device image sensors (i.e., see page 8, lines 25+).

Regarding claim 4, Garrett '411 discloses wherein at least a subset of the camera elements comprise photosensors (i.e., page 9, lines 5+).

Regarding claim 5, Garrett '411 discloses wherein a given one of the camera elements comprises at least a portion of a pair of collimated plates (i.e., noted the parallel plate as shown in Fig. 5), and wherein an imaging angle is selected for the given camera element by establishing a corresponding positioning of holes in the collimated plates (i.e., see Figs. 3, 5 and 6; page 7, lines 20+ and page 8, lines 2+).

Regarding claim 6, Garrett '411 discloses wherein the combined display-camera comprises a flat panel display (i.e., noted from Figs. 2 and 5, that the display panel 50 is flat).

Regarding claim 7, Garrett '411 discloses wherein at least a subset of the plurality of display elements (Figs. 4 and 6) and at least a subset of the plurality of camera elements are arranged in an array which includes more display elements than camera elements (i.e., Figs. 4, 5 & 6, page 8, lines 2+ and page 9, lines 20+).

Regarding claim 8, Garrett '411 discloses wherein the one or more imaging angles are selected to provide an imaging operation for the combined display-camera (i.e., Fig. 3, page 7, lines 20+) which approximates that of a lens-based single-camera system (i.e., page 3, lines 21+).

Regarding claim 9, Garrett '411 discloses wherein the one or more imaging angles are selected to provide an imaging operation for the combined display-camera (i.e., Fig. 3, page 7, lines 20+) which approximates that of a pin-hole camera system (i.e., see page 4, lines 20+).

Regarding claim 12, Garrett '411 discloses a method for use in an image processing system (i.e., Figs., 1-7), the method comprising the steps of:

providing a combined display-camera having a plurality of display elements and a plurality of camera elements (Fig. 4; col. 4, lines 15-40), arranged substantially in a common plane (i.e., Figs. 2 and 5) with the display elements being interspersed with the camera elements (i.e., noted from Figs. 2, 5 and 6, the camera is arranged substantially in the same plane as the display device), and

wherein each of at least a subset of the camera elements has one or more imaging angles associated therewith (i.e., see Fig. 3 and page 9, lines 20+); and selecting the one or more imaging angles to provide a desired imaging operation for the combined display-camera (i.e., noted from Figs. 3 and 5, the imaging angle of the camera is selected based on the viewing angle 110. Since there are an infinite number of viewing angles 110, it is cleared that more than one imaging angles can be selected to provide a desired imaging operation; see page 7, lines 20-39).

Regarding claim 13, Garrett '411 discloses an article of manufacture (Figs. 1-6) comprising: a storage medium (Fig. 7, the elements 240 and 260) for storing one or more programs for use in an image processing system (i.e., page 6, lines 5+ and page 9, lines 15+), the image processing system including a combined display-camera having a plurality of display elements and a plurality of camera elements (Fig. 4; col. 4, lines 15-40), arranged substantially in

a common plane with the display elements being interspersed with the camera elements(i.e., Figs. 2 and 5), and

wherein each of at least a subset of the camera elements has one or more imaging angels associated therewith (i.e., see Fig. 3 and page 9, lines 20+), wherein the one or more programs when executed by a processor (i.e., Fig. 7, the element's 250; and page 9, lines 15+) implement the step of selecting the one or more imaging angles to provide a desired imaging operation for the combined display-camera (i.e., noted from Figs. 3 and 5, the imaging angle of the camera is selected based on the viewing angle 110. Since there are an infinite number of viewing angles 110, it is cleared that more than one imaging angles can be selected to provide a desired imaging operation; see page 7, lines 20-39).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Garrett '411 in view of Miyano (U.S. 5,610,390).

Regarding claim 10, it is noted that Garrett '411 does not explicitly stated that the camera comprises a set of angles including a horizontal angle $\alpha_x = \tan^{-1}$ (x/d) and a vertical angle $\alpha_y = \tan^{-1}$ (y/d), where x and y denote the horizontal and vertical distance from the camera to the optical axis of the combined display-camera, and "d" is the distance from an image plane of the combined display-camera to a desired virtual focus point of the combined display-camera.

However, the above-mentioned claimed invention is conventional well known geometric principle for determining an acute angle value. For example, it is basic well known teaching of trigonometric function that the ratio of the length of the side opposite the angle to the length of the side adjacent to the angel is used to obtain an acute angle in a right angle triangle. In view of this, it is cleared form Figs. 2 and 3 that the tangential angles of an imaging elements of the camera 60 (i.e., see Fig. 3 and page 7, lines 20+) positioned in the horizontal plane in "X" direction and the vertical plane in "Y" direction (i.e., noted that camera 60 is positioned in the "xy" plane as shown in Figs. 2 and 3 of Garrett '411) obviously contain the angles $\tan \alpha_{(x, y)}$ = Length of the side opposite (i.e., x for "X" plane and y for "Y" plane)/Length of the side Adjacent to the angel (i.e., the focal length of the camera). In view of this it is obvious to include the angel $\alpha_{(x, y)} = \tan^{-1}$ (the horizontal x or vertical y values)/(the focal length of the camera) in the camera system of Garrett '411, and this is further evidenced the teaching of Miyano '390.

Moreover, Miyano '390 teaches the above-mentioned well known trigonometric function for determining the tangential angel of the camera (see Figs. 3A-3C; col. 3, lines 60+ and col. 4, lines 5+) where the angle of the camera (θ) = $\tan^{-1}$ (the length "h")/(the length H). In view of this, it is obvious that the camera (60) of Garrett '411 may include one horizontal angle such that θ_x = $\tan^{-1}$ ("h" in horizontal direction)/(the focal length of "H") and one vertical angle such that θ_y = $\tan^{-1}$ ("h" in vertical direction)/(the focal length of "H") as suggested by Miyano '39.

In view of the above, having the system of Garrett '411 and then given the well-established teaching of Miyano '390, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide well known set of camera angles as taught by Miyano '390, since Miyano '390 states at col. 2, lines 1+ that such a modification would provide a high quality image over the entire pixel constituent element of a solid-state image pickup element and improve the pixel opening.

6. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Garrett '411 in view of Meyers (U.S. 6,137,535).

Regarding claim 11, Garrett '411 discloses wherein each of at least a subset of the camera elements has a plurality of image sensor associated therewith, and different perspectives of a scene can be generated in the image processing system (i.e., Figs. 4, 6 and 7; page 9, lines 15+).

Furthermore, it is noted that Garrett '411 does not explicitly state that different imaging angles can be set for the different image sensors of a given camera element as recited in present claimed invention.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Meyers '535. In particular, Meyers '535 teaches that it is conventionally well known to set the different imaging angles for the different image sensors of the given camera element to provide a different segment of a total field of view (Figs. 1A, 2 and 9; noted the different imaging angles set for different image sensors of the camera; see col. 1, lines 15+, col. 3, lines 30+ and col. 4, lines 45+).

In view of the above, having the system of Garrett '411 and then given the well-established teaching of Meyers '535, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Garrett '411 as taught by Miyano '390, since Miyano '390 states at col. 3, lines 35+ that such a modification would provide a different segment of a total field of view.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Wu '768, Tanigaki '027, Heirich '758, Tanigaki '725, Nakamura '690 (JP Abstract of 04-167690), Ting '414 and Rostoker '333 shown an apparatus for use in an image processing system having a combined display-camera system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aung S. Moe whose telephone number is 703-306-3021. The examiner can normally be reached on Mon-Fri (9-5).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on 703-305-4929. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Aung S. Moe
Primary Examiner
Art Unit 2612

A. Moe
April 12, 2004